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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,019	12/01/2003	John T. Meagher	IS01153AP/FLE MOTA:0007	2597

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EXAMINER	
ROGERS, DAVID A	

ART UNIT	PAPER NUMBER
2856	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/725,019	MEAGHER, JOHN T.	
	Examiner	Art Unit	
	David A. Rogers	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28 and 30* is/are rejected.

7)☒ Claim(s) *29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20031201*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because reference item 16 shown in figure 2 should be correctly labeled as reference item 40. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended."

If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-7, 10-15, 18-28, and 30 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by United States Patent United States Patent 5,105,662 to Marsh *et al.* in view of United States Patent 6,282,953 to Benjey and United States Patent 6,672,138 to Cook *et al.*

Marsh *et al.* teaches a sensing device for determining the level of a liquid in a liquid storage tank (reference item 12). The sensing device comprises a first sensing area and a second sensing area, each area defining a region with both a liquid space and a vapor space. The first and second sensing areas are separated from each other through the employment of a pipe (reference item 50) and tubing (reference item 44). Vapor (airspace) pressure in the first and second sensing areas are monitored using a differential pressure sensor (reference item 30) connected a processing circuit (reference item 32) and a display (reference item 42). Marsh *et al.* does not teach the use of separate pressure sensors for the first and second sensing areas. Marsh *et al.* also does not teach the use of temperature sensors.

Benjey teaches a sensing device for determining the level of fuel in a fuel tank (reference item 10) for a vehicle. As best seen in figure 1 the device comprises a solid state pressure sensor (reference item PT_3). This sensor

determines the vapor pressure in the headspace region of the fuel tank. Benjey also utilizes look-up tables for correlating height to volume of fuel.

Marsh *et al.*, alone or in view of Benjey, does not teach the use of a temperature sensor for the vapor space in the tank. Cook *et al.* teaches a fuel tank (reference item 110) with a sensor (reference item 120). Specifically, Cook *et al.* teaches the use of evaporative pressure sensors with temperature measuring capability in order to measure pressure and temperature in the vapor space above the fuel level. Cook *et al.* teaches that the measured pressure is corrected by the use of the ideal gas law, $(P)(V) = (n)(R)(T)$, where P is the measured pressure, V is the volume, and T is the measured temperature. Cook *et al.* teaches

> The sensor or sensor subsystem computes temperature-compensated pressure values, thereby eliminating or reducing false positive or other adverse results triggered by temperature changes in the fuel tank.

Cook *et al.* further comprises code for comparing decay rates of the measured pressure and temperature to predetermined values for leak detection.

Replacing the differential pressure sensor with two solid state pressure sensors would have been an obvious modification to the device of Marsh *et al.* in view of Benjey. First, the differential pressure sensor is coupled to the vapor spaces in the tank via flexible conduits (reference items 34 and 38). The use of solid state sensors would eliminate the need for these flexible tubes, which have to be properly connected to the differential sensor in a leak-free manner, and which will be prone to embrittlement and breakage over time. Furthermore, Benjey teaches that the solid state pressure sensor is simple and of low cost. As seen in figure 1 of Benjey additional pressure sensors (reference

items PT_1 and PT_2) are disposed in the fuel thus indicating their high durability in the fuel-based environment. The modification of the device of Marsh *et al.* to measure temperature in addition to pressure would also have been obvious in view of Cook *et al.* in order to ensure that the pressure readings provide for correct fuel measurements.

With regard to claims 8, 9, 16, and 17 the use of blow-molded plastic for forming fuel tanks is well known and is useful for forming fuel tanks in a myriad of different sizes and shapes. See, for example, United States Patent 4,930,811 to Tsukasa *et al.*

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Marsh *et al.* with the teachings of Benjey and Cook *et al.* to provide a device to determine fuel level using two pressure/temperature sensors in a tank with two compartments.

Allowable Subject Matter

4. Claim 29 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dar
10 January 2005

HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
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